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tions be so developed as to make them, so far as practicable, accessible to the engineer. In the practical applications of mathematics to engineering and, probably, to other sciences, the solutions of problems are often not exact. Graphical solutions are subject to a very considerable margin of error and arithmetical solutions almost always involve the multiplication or division of decimals in which only a certain number of decimal places are retained. Transcendental functions and radicals are only given approximately in the tables and it may well happen that a solution in a rapidly converging series is just as convenient as an exact solution. If a solution is in the form of a series with general expressions for coefficients, it may be almost as satisfactory as any other kind of a formula. In that case, if a similar problem occurs again, it will only be necessary to substitute the proper values for the constant terms in the coefficients, which can be done by an assistant who is not familiar with differential equations. I therefore hope that mathematicians will publish freely their methods for approximate solutions of differential equations and other problems, preferably in a form that will not compel the busy engineer to search through a multitude of monographs, many of which are in foreign languages and some of which can not be readily obtained, before he can get an adequate idea of the nature of the solution.

Elliptic integrals are met with occasionally and if they merely have to be integrated once approximate methods are available. If successive integration is required, it is apt to be "another story."

It may be that all problems that can be solved by vector analysis can also be solved by the older methods, but this method is often so much simpler that the subject is worthy thorough study.

The engineer often meets with transcendental equations and they usually have to be solved as individual problems. If more general methods, even if only approximate, have been developed, they should be more generally known.

Complex variables are occasionally encountered, chiefly in connection with differential equations. If a practical knowledge of the subject could be imparted without requiring the reader to toil through ponderous tomes in an effort to find an explanation, it would be helpful.

The modern theory of functions is a subject which is very interesting to one who is fond of mathematics for its own sake; but can not some way be found by which the student can get at the pith of the matter in a reasonable time? The subject is chiefly academic, but is very attractive.

II. Relating to New Remainder Terms for Certain Integration Formulæ.

By S. A. Corey, Albia, Iowa.

In the June, 1917, number of the Monthly Professor Daniell notes the fact that at least one of the remainder terms of the integration formulæ which I gave in the June–July, 1912, number of the Monthly is needlessly large. I also observe that the remainder term to my formula 25s which he gives is too small, as he has tacitly made the unwarranted assumption that the signs of his S_1 and S_2

must always be alike. To set these matters aright I have computed a new set of remainder terms (based on a form due to Poisson[1]) for all the formulæ originally given. All the work of computation has been carefully checked to eliminate errors as far as possible. We employ the symbol r_{2n},

$$r_{2n} = \pm \theta \frac{x^{2n+1}}{(2n)!} \max \left| f^{(2n+1)}(a + \theta_1 x) \right|,$$

where $0 \leq \theta \leq 1$, and $0 \leq \theta_1 \leq 1$.

Formula	Remainder Term	Formula	Remainder Term
(1)	$r_4/72$	(2)	$r_4/216$
(3)	$17r_6/24192$	(4)	$11r_6/7560$
(5)	.000,154r_8	(6)	.000,000,586r_8
(7)	.000,000,279r_8	(8)	.000,057,6r_6
(9)	.000,009,56r_8	(10)	.000,011,5r_8
(11)	.000,029r_8	(12)	.000,060,6r_8
(13)	.000,010,7r_{10}	(14)	.000,015,9r_8
(15)	.000,000,584r_{12}	(16)	.000,000,252r_{12}
(17)	.000,000,16r_{10}	(18)	.000,105r_6
(19)	.000,29r_6	(20)	.000,011r_6
(21)	.000,000,143r_{10}	(22)	.000,000,000,203r_{16}
(23)	.000,010,6r_6	(24)	.000,000,002,16r_{12}
(25)	$r_6/504$	(26)	$r_6/3024$
(27)	.000,046,9r_8	(28)	.000,146r_8
(29)	.000,011,7r_{10}	(30)	.000,000,006,9r_{10}
(31)	.000,001,65r_8	(32)	.000,000,335r_{10}
(33)	.000,000,419r_{10}	(34)	.000,001,16r_{10}
(35)	.000,002,76r_{10}	(36)	.000,000,537r_{12}
(37)	.000,000,425r_{10}	(38)	.000,000,020,8r_{14}
(39)	.000,000,005,53r_{14}	(40)	.000,000,002,56r_{12}
(41)	.000,000,118r_8	(42)	.000,662r_8
(43)	.000,050,9r_8	(44)	.000,006,27r_{10}
(45)	.000,031,5r_{10}	(46)	.000,001,87r_{12}
(47)	.000,000,000,15r_{12}	(48)	.000,000,097r_{10}
(49)	.000,000,055r_{14}	(50)	.000,000,24r_{12}
(51)	.000,000,021r_{12}	(52)	.000,000,000,213r_{16}
(53)	.000,372r_{10}	(54)	.000,013r_{10}
(55)	.000,001,29r_{12}	(56)	.000,000,029,8r_{14}.

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[1] See Ford, *Studies on Divergent Series and Summability*, p. 6.